The Effect of Investment in Technology on Lagged Stock Returns of Banks Listed at the Nairobi Securities Exchange

Dr. Cyrus Iraya
Senior Lecturer
Department of Finance and Accounting
University of Nairobi
Kenya

Kitonyi Saiti
PHD Student
Finance and Accounting Department
University of Nairobi
Kenya

Abstract

The study sought to establish the relationship between the implementation of technology and lagged bank stock returns of banks listed at the Nairobi Securities Exchange. Information Technology is increasingly important in banking because it is an industry that is information-intensive. Therefore banks included Kenyan banks have invested heavily in new technologies in the industry. The study used a descriptive research design as it is ideal in identification of relationships among variables. A cross-sectional study was adopted as data was collected within the period 2010 to 2015. The indicators of technology in this study are internet banking, mobile banking and Automated Teller Machines commonly known as ATMs. The population of the study was the NSE listed banks as at 30 April 2016. The data collection process consisted of content analysis of the annual reports of the listed banks particularly the Chairman and CEO's reports. The sentences about the indicators of technology were counted and analyzed. Descriptive statistics were carried out and tests of significance conducted. The regression model was used to investigate relationship. These technologies have led to convenience for customers and efficiency in bank operations however they are not without security issues.

Keywords: e-Banking, Automated Teller Machines, Mobile-Banking and Stock Returns

1.1 Introduction

Financial services at times, and rightly so, are said to be a dark art, with complex jargons and an impenetrable language (Starling Bank, 2016). This leads to customer dissatisfaction and a need for clearer information. Information Technology (IT) is increasingly important in banking because it is an industry that is information-intensive. Banks have been driven to the electronic world by the desire to reduce both operational and administrative costs and to obtain both timely and accurate information (Bradley, 2009; Kombe & Kimani, 2015). The potential productivity that adoption of IB offers is a huge motivation (Sullivan & Wang, 2005). Technology has advanced exponentially and has become indispensable in the provision of efficient banking services. Following the introduction of IB, ATMs and phone banking, which are the initial cornerstones of electronic finance, the competition dimensions have changed (Kombe & Kimani, 2015).Queueing is a thing of the past as payment of bills including cash withdrawals can be done at one's convenience anytime and anywhere (Okiro & Ndungu, 2013).

The big banks in the UK continue to invest in infrastructure to deliver digitalized services. The competition is intensifying with the entry of fintech start-ups and technology giants into the finance sector. Innovations like the Block chain are available for traditional banks (Finnegan, 2016).A block chain is the structure of data that represents a financial ledger entry, or a record of a transaction. Each transaction is digitally signed to safeguard its reliability and to avoid interference (Hasell, 2016).A major concern for banks is having their market share taken by technology giants like Apple, Google, Facebook and Amazon. Apple Pay mobile payments service was launched this year and Samsung is set to be making a similar offer.

Though banks such as Barclays UK has a digital wallet it would be interesting to see if they will attempt to secure their market or will succumb to the internet giants (Finnegan, 2016). In Kenya the introduction of ATM, online banking has been well embraced. According to the Economist (2013) Kenya is leading the world in the use of Mobile money. For example customer of several banks can link their accounts to Mpesa the mobile money transfer function offered by a telecommunication company Safaricom. Almost all banks in Kenya now have given their customers the possibility to transact without going physically to the bank.

The return of stock is made up of two parts; the expected returns which is dependent on the information available to the shareholders that bears on the stock and is based on the market understanding of the important factors that will be influential to the stock in the coming year and the return that is uncertain and risky. This risky portion comes from unexpected information received during year like a profit warning (Komen, 2013).The gains and losses that investors generate in the finance market are called Stock Market Returns. Buying a stock at lower price and selling it at a higher price in the secondary market is the most common form of generating stock returns. Unlike fixed rate bonds these returns are not fixed as they may be positive or negative due to market risks (Economy Watch, 2010).

The banking industry is facing drastic changes due to the entry of FinTech startups and IT companies into traditional banking businesses banks must reinvent themselves to maintain relevancy and a healthy financial performance (Finnegan, 2016). The measurement of performance is critical for effective management of any firm and to see the impact of resources on performance. Therefore this study used stock returns as a measure of banks performance it is market based and forecasts future performance(Al-Matari & Abdullah, 2014).The purpose of a market for securities is to facilitate trading of stocks and other financial instruments .The recent vast development in technology have been remarkably transformed the security market (Omuchesi & Bosire, 2014).The performance of a stock market is of interest to various parties including investors, capital markets among others (Valentin, 2012; Menge et al., 2014).

The NSE which is the context of this study began informally in the 1920sthenwas founded as a private association in 1954. The NSE began functioning more formally in 1989 after the establishment of its regulator, the Capital Markets Authority of Kenya (CMA). In February 2001, the securities market was divided into four independent market segments. In 2006 live trading on the Automated Trading Systems (ATS) and the Central Depository and Securities Corporation (CDSC) was established. 2014, CMA approved the listing of the NSE stock and subsequently lists its own shares (Aduda et al., 2012; NSE, 2016).NSE provides a trading platform and oversees its member firms. Banking is the largest sector at the NSE and has digitalised most of its opearations(Nairobi Securities Exchange, 2016). This study selected the 11 banks in the banking sector to investigating the impact of the techonology on its stock returns.

1.2 Research Problem

Digital banks such as Starling UK, Atom and Tandem whose purpose is to bring financial services out of the darkness of the past into the flexible mobile and digital open are changing banking (Starling Bank, 2016).They are the new competition in the UK dominated by Lloyds, Barclays, HSBC and Royal Bank of Scotland(Financial Times, 2016). These new challengers are taking up some market share as the incumbents as they struggle with improving legacy infrastructure(Finnegan, 2016).The example of the UK shows the growing importance that technological development has in financial services

Zhu et al.,(2007) studied the interest rate sensitivity of bank stock returns between the period from January 1976 to December 2005 using the two-index model by Stone (1974). The evidence revealed that although the market risk is the primary determinant of bank stock returns, interest rate changes have a significant explanatory power for the other portion of variability after the market risk is controlled. Ioannidis, et al. (2008) found in their study of the relationship between bank efficiency and stock returns a positive relationship between profit efficiency changes and stock returns. Evidence was gathered from Asia and Latin America. They did not find evidence that cost efficiency changes are affected stock returns. In that study they found that profit efficiency better explains bank stock returns compared to traditional accounting profits measures like return on equity.

Vaz et al. (2008) examined the impact of interest rates on bank stock returnsof listed Australian banks casued by changes iin the cash rate meaured by abnormal and cumulative returns.Komen (2013) examined the effect of profit warnings on stock returns of firms listed at the Nairobi Securities exchange. The findings were that there was a significant negative relationship.

Omuchesi and Bosire (2014) investigated the effect of automation on volatility of prices at the NSE with two study periods before and after automation. They found that ATS did not have a significant effect on the stock prices. The study focused on the automation of the security market and not on the players in that market as this study did. Kabiru, et al.(2015) investigated the effect of general elections on stock returns of firms listed at the NSE using event study methodology. The study found that the market was both highly positive and negative depending on the volatility of the election environment. Monyoncho (2015) investigated the relationship between new technologies and financial performance of commercial banks in Kenya. That study used return on assets (ROA) as a measure of financial performance which is accounting based criticised because for being backward looking. The performance measurement for this study was stock returns which are forward looking and market based (Al-Matari & Abdullah, 2014).

In Kenya banks continue to reinvent the services they offer in order to remain relevant to their clients' dynamic needs by using new banking technologies (Kenya Bankeers Association, 2013). The concern is as the consumer gets better value from these improved services whether there is an equal benefit for the banks. The research problem is the relationship between technology and bank stock returns in NSE. The research sought to answer the question about what the effect of technology is on the stock returns of banks listed at the NSE?

1.3 Objectives of the Study

The general objective of this research was to establish the effect of technology on the stock returns of banks at the Nairobi Security Exchange.

2.1 Theoretical Literature Review

The Decomposed Theory of Planed Behavior was developed by Taylor & Taylor, (1995)and it is a variation of the theory of planned behavior (TPB) which breaks down attitudinal, normative and control beliefs into a set of more measureable variables which are individual's belief, embracing attitude, subjective norm and perceived behavior (Shih & Kwoting, 2004). (Sahli & Legoherel, 2014) used this model to investigate the factors influencing the intention to use the Internet to book tourism products online in Tunisian context. The results of the study confirmed that DTPB has explanatory power in accounting for consumers' behavioral intention in the context of e-tourism. Shih and Kwoting (2004) examined how a consumer's belief, adopting attitude, biased norm and perceived behavioral control can influence their intention in Taiwan banking industry.

The Technology Acceptance Model (TAM) was developed by Davis (1989) based on the Theory of Reasoned Action (Ajzen & Fishbein, 1980). TAM is a theory that strives to explain how users come to accept and end up using a technology. TAM explains this process using two factors, perceived usefulness (PU) and perceived ease of use (PEOU). Behavioral intent is a key feature in TAM as it leads the desired end which is to the use of the innovation (Bradley, 2009). TAM is designed to forecast user's acceptance of IT and usage in an organization. TAM is based on perceptions.

The Innovation Diffusion Theory (IDT) was developed by Everett Rogers (1983). The theory seeks to explain how, why, and at what rate new ideas and technology spread. The four main elements in the IDT are innovation, channels, communication channels, time and social systems. Diffusion is the process by which an innovation is communicated in time via channels among members of a social system. The characteristics of an innovation as perceived by society determine the rate of adoption. These characteristics include relative advantage, compatibility, complexity, trial ability and observability (Moga, 2010). Sullivan & Wang (2005) studied innovation diffusion as the dependent variable and the impact of the Internet Banking (IB) as a new cost-saving technology and found that the theory can allow explanations of variation in diffusion rates across geographical areas.

2.2 Empirical Literature Review

The impact of interest rates on bank stock returns has been a subject of many empirical investigations. A popular theoretical framework in these studies is the two-index capital asset pricing model developed by (Stone, 1974). This model adds an additional explanatory variable to the traditional single index market model CAPM. The interest index is added to capture the portion that is not explained by the equity market risk index. The explanatory power of the interest index is clearly identifiable in stocks of firms dealing in gold, utilities, banking and in the finance sector (Zhu et al., 2007).

Kombe and Kimani (2015) identify internet banking as a determinant of financial performance. Internet banking (e-banking) is the use of internet and telecommunication networks to deliver a wide range of value added products and services to bank customers (Kombe & Kimani, 2015).E-Banking allows individuals customers to perform manage their banking needs from wherever they are via the internet (Okiro & Ndungu, 2013). The Internet has also made the physical presence of banks unnecessary (Kombe & Kimani, 2015). The adoption of internet has enhanced financial performance the banking industry due to improved service provision leading to increased deposits (Monyoncho, 2015).

ATMS can be considered to be another of the determinants of stock returns of banks. An ATM is a device that provides bank clients access to some selected financial services such as cash withdrawals and deposits, bank balance and mini-bank statement. This is convenient for customers as they can transact at any time as they do not need a teller, it is also cheaper for the bank. There is more productivity implied in the combination of ATMs and a human teller. Higher productivity can be achieved from ATMs as they can continue working without a break unlike human beings (Monyoncho, 2015).

The development of Mobile banking has led it to become one of the determinants of stock returns. Thanks to M-Pesa it is much easier to pay for a taxi using your mobile phone is easier in Nairobi than it is in New York. M-Pesa was originally created as a convenient and cheap system to allow microfinance-loan repayments to be made by phone. It was about banking the unbanked of the lower cadres of society. However it was broadened to become a general money-transfer scheme (The Economist, 2013). Mobile banking has moved to a type of virtual banking (Okiro & Ndungu, 2013).Bank lending rate is another of the determinants of the stock returns of banks. Normally it is differentiated depending on the creditworthiness of borrowers and objectives of financing(World Bank, 2016).The Government through the Central Bank using monetary policy increase or lower interest rates to stabilize or stimulate the economy. If a company borrows money higher interest rates will affect the cost of its debt. This can reduce company profits and the dividends it pays shareholders may cause its share price to drop (Fama & French, 1992). According Vaz et al. (2008) the operating returns and implicitly the stock returns of financial institutions such as banks are affected by interest rate changes. The movement of interest rate possesses some explanation for the variability of bank stock returns that is not fully explained by market risk (Zhu et al., 2007).

3.1 Research Design and Population

The study used a descriptive research design. This design is appropriate for the study as enables a higher level of analysis such as correlation and regression. This analysis makes it possible to establish the nature and strength of the associations between variables. This method has been used by other similar studies such as (Monyoncho, 2015 &Okiro & Ndungu, 2013). The target population of this study was all eleven listed banks at the Nairobi Security Exchange. Since the population is not big a census method was employed in data collection.

3.2 Data Analysis Techniques

Data on total annual investments in ATMS, Internet Banking and Mobile Banking together with average annual returns was collected from the banks and the NSE. The data was then standardized for analysis. Information on the dividends and market prices of shares of the banks was collected and used to compute the annual stock returns for each bank. This content analysis was done for the period 2010 to 2016 and computation of stock returns was done for the period 2011 to 2017. This is because the study was to establish the effect of current investment on technology on stock returns for periodt+1.In order to investigate the research objective, regression analysis was used to study how the dependent variable Y (Stock returns of period t+1) is related to the independent variables of investment in technology. The following analytical model was used:

$$Y_{t+1} = \alpha + \beta_{1t} X_{1t} + \beta_{2t} X_{2t} + \beta_{3t} X_{3t} + \beta_{4t} X_{4t} + \varepsilon$$

Where;

α = Constant Term, part of the stock returns explained by other variables

Y_{t+1}=Stock Returns of the listed companies for period t+1 (Computed as $\frac{d1}{Po} + \frac{P1-Po}{Po}$)

β_{1t}, β_{2t}, β_{3t}, β_{4t} are regression coefficients or the change induced in Y by each of the independent variables

X_{1t} = Investments in internet banking for period t obtained from bank reports

X_{2t} = Investments in ATMs for period t obtained from bank reports

X_{3t} = Investment in Mobile Banking Score for period t obtained from bank reports

X_{4t} = Interest Rate for period t is the control variable obtained from the average lending rate by commercial banks

ε = Error Term

Results of the Research and Discussions

Data for 11 commercial banks listed at the Nairobi Security Exchange was analyzed to yield the results covered in this section.

Regression Analysis

The regression was conducted to determine the effect of technology on stock returns for banks listed at the NSE. The independent variable was Stock returns(Y_{t+1}), while the dependent variables were Internet Banking(X_1), Mobile Banking(X_2), ATMS(X_3) and Interest Rates(X_4).

The Model Summary[b]

Multiple R	R Square	Adjusted R Square	Standard Error	Observations
0.677149[a]	0.45853	0.415213	25.88069	55

a. Predictors: (Constant), Internet Banking (X_1), Mobile Banking (X_2), ATMS (X_3) and Interest Rates (X_4).
b. Dependent Variable: Stock returns (Y_{t+1})

The model shows that the combination of the above predictor variables have an R^2value of 0.4585. This means that 45.85% of the change in Stock Returns **(Y_{t+1})** can be explained by the independent variables the other percentage can be explained by other variables that were not included in the study.

Analysis of Variance[a] (ANOVA)

	df	*Sum of Squares*	*Mean Square*	*F*	*Significance F*
Regression	4	28360.60389	7090.151	10.58531	2.72262E-06[b]
Residual	50	33490.51044	669.81021		
Total	54	61851.11433			

a. Dependent Variable: Stock returns(Y_{t+1})
b. Predictors: (Constant), Internet Banking (X_1), Mobile Banking (X_2), ATMS (X_3) and Interest Rates (X_4).

When a model has a P value that is less than 0.05 it is said to be statistically significant. The model above therefore is statistically significant because it has a P-value of 0.000002722.

Coefficients of the Model

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Constant	-168.6661	31.51411148	-5.3520814	2.18E-06
Internet Banking	-0.573432	0.430861314	-1.3308969	0.18926
Mobile banking	-0.246969	0.698153406	-0.3537455	0.725017
ATMS	-0.433312	0.596782467	-0.7260802	0.471175
Interest Rates %	11.766319	1.901908484	6.1865852	1.12E-07

The regression coefficients are shown in the table above. The coefficients Internet Banking(X_1), Mobile Banking (X_2), and ATMS(X_3) are not statistically significant with P values ranging between 0.1892 and 0.725. Interest Rates are statistically significant with a P value of 0.000000112 which is less than 0.05. The constant is also significant with a P value of 0.00000218. The regression equation can be fitted as follows based on the values of the coefficients: Y_{t+1}=-168.6661-0.573432(X_1)-0.246969(X_2)-0.433312(X_3)+11.766319(X_4)

A unit increase in the stock returns of period t+1 is collectively as a result of a decrease of 168.6661of the constant, a decrease of 0.573432 of Internet Banking(X_1), a decrease of 0.246969 of Mobile Banking (X_2) a decrease of 0.433312 of ATMS (X_3) and an increase of 11.766319 of Interest Rates (X_4)

Conclusions and Discussions

The study sought to establish the effect of technology on the stock returns of banks listed at the NSE. The data for the study was collected from the annual reports of the listed banks and other relevant market websites. The study found that the regression model was statistically significant in explaining the change in stock returns with a p-value of 0.000002722. The model could also explain 45.85% of the changes in stock returns for period t+1. The findings of the study are that there is a significant relationship between technology and stock returns for period t+1 of NSE listed banks.

The banks that were reviewed in the study had all installed internet banking system for is clients. Internet Banking which is the one that was most mentioned on in the annual reports has a week relationship with the bank stock returns which is evidenced by the p value of 0.18926.Mobile banking because of its convenience is gaining ground on Internet Banking. The statistics in 2014 show an increase in all the banks save for National bank in the use of mobile banking networks. This variable however the findings show that it was not statistically significant with a p value of 0.725017.

ATMS were most popular earlier because of the ability to access cash at any time of day. The ATMs provide a 24 hour service. Some banks even have intelligent ATMs where cash can be deposited. The ATMS also have multiple currencies like dollars and pounds this is the case with I&M bank. This variable was found not to be statistically significant with a p value of 0.471175. There is a strong relationship between interest rates and stock returns as reflected in the P value of 0.000000112 the findings of this study are in agreement with Fama & French(1992). In their study the found that when interest rates are increased investors sell or trade their high risk stocks for government securities such as bonds. They do this to take advantage of the higher yields and to protect their investment from loss.

Recommendations for further study

A study could be done on the relationship between technological cost and operation efficiency and bank stock returns. This study will investigate the cost cutting and operation improvement that has been brought about by technology and whether it has any effect on bank stock returns. This study would add value to organizations that would be able to measure the usefulness of technology. The relationship between new banking technology and social responsibility could be studied as it would give an insight into whether there is an improvement in companies' social responsibility as a result of the new technologies. This would be of interest to the public and also socially conscious investors and to the Government. Another study investigating the customers' preferred method of conducting their financial transactions and its effect on the financial performance of banks could be undertaken. This study would be beneficial to banks as it would assist them in their selection of new investment in technology. It would also help the customers to get better service from their banks.

References

Aduda, J., Masila, J. M., & Onsongo, E. N. (2012). The Determinants of Stock Markets Development: The Case for the Nairobi Stock Exchange. *International Journal of Humanities and Social Science*, 29(9).

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. In I. s. theories, *Ajzen and Fishbein's Theory of Reasoned Action (TRA) (1980).* Englewood Cliffs, NJ: Prentice-Hall.

Al-Matari, E. M., & Abdullah, O. Y. (2014). The Measurement of Firm's performance's Dimensions. *Asian Journal of Finance and Accounting*, 6(1).

Bradley, J. (2009). The Technology Acceptance Model and Other User Acceptance Theories. In Y. K. Dwivedi, L. Banita , M. Williams, & S. Schneberger, *A Hankbook of Research Contemporary theoretical Models in Information Science* (p. 660). Hershey, United States: IGI Global.

Davis, F. (1989). Percieved Usefulness, Perceived Ease of Use and User Acceptance of Information Technology. *MIS Quarterly*, 319-339.

Economy Watch. (2010, November 23). *Stock Markets Returns*. Retrieved from www.economywatch.com: http://www.economywatch.com/stock-markets-in-world/returns.html

Fama, E., & French, K. (1992). The Cross Section of Expected Stock Returns. *Journal of Finance*, 47, 427-65.

Financial Times. (2016, January 11). *Financial Times*. Retrieved from www.ft.com: http://www.ft.com/intl/cms/s/0/9dba77a0-b796-11e5-bf7e-8a339b6f2164.html#axzz4AuB9TYyl

Finnegan, M. (2016, April 25). *How Technology will transform banking in 2016: Blockchain, digital challenges and IoT*. Retrieved from http://www.computerworlduk.com: http://www.computerworlduk.com/it-business/how-technology-will-transform-banking-in-2016-blockchain-digital-banks-iot-3631853/

Hasell, J. (2016, April 14). *What is a blockchain and how does it work?* Retrieved from www.cio.com: http://www.cio.com/article/3055847/security/what-is-blockchain-and-how-does-it-work.html

Ioannidis, C., Molyneux, P., & Pasiouras, F. (2008). The relationship between bank efficiency and stock returns: evidence from Asia and Latin America. *Working Paper, University of Bath School of Management*.

Kabiru, J. N., Ochieng', D. E., & Kinyua, H. W. (2015). The Effect of General Elections on STock Returns at the Nairobi Securities Exchange. *European Scientific Journal* , ISSN: 1857-7881.

Kenya Bankeers Association. (2013, January 31). *Kenya Bankeers Association*. Retrieved from www.kba.co.ke: http://kba.co.ke/contacts/130-driving-innovation-and-technology

Kombe, K., & Kimani, W. (May 2015). Effects of Internet Banking on the Financial Performance of Commercial Banks in Kenya a Case of Kenya Commercial Bank. *International Journal of Scientific and Research Publications*, 5(5).

Komen, E. C. (2013). The Effect of Profit warnings on Stock Returns of Firms Listed at the Nairobi Securities Exchange. *Unplished MBA Research Project, University of Nairobi*.

Menge, R., Mwangi, M., & Kimani, J. G. (2014). Effect of elections on Stock Market Returns at Nairobi Securities Exchange. *Prime Journal of Social Sciences*, 3(6), 763-768.

Moga, L. M. (2010). The adoption of e-banking: An application of theories and models for technologies acceptance. *Development, Energy, Envrironment, Economics, CNCSIS – UEFISCSU, project number:* , http://www.wseas.us/e-library/conferences/2010/Tenerife/DEEE/DEEE-41.pdf.

Monyoncho, L. N. (2015). Teh effect of banking technologies and the financial performance of commercial banks in Kenya. *International Journal of Economics, Commerce and Management UK*, 3(11).

Nairobi Securities Exchange. (2016, May 30). *Nairobi Securities Exchange*. Retrieved from Nairobi Securities Exchange: www.nse.co.ke

Okiro, K., & Ndungu, J. (2013). The impact of Mobile and Internet Banking on Performance of Financial Insitutions in Kenya. *European Scientific Journal*, 9(13), e-ISSN 1857-7431.

Omuchesi, J. A., & Bosire, M. (2014). The effect of Automation on Stock Market Price. *IOSR journal of Economics and Finance*, 5(3),71-79, www.iosrjournals.org.

Sahli, A. B., & Legoherel, P. (2014). Using the Decomposed Theory of Planned Behaviour(DTPB) to explain the Intention to Book Tourism Products Online. *International Journal of Online Marketing (IJOM)*, 4(1).

Shih, Y.-Y., & Kwoting, F. (2004). The use of a decomposed theory of planned behavioiur to study Internet banking in Taiwan. *Internet Research, Emerald Insight*, 14(3), 213-223.

Starling Bank. (2016, October 15). *Starling Bank*. Retrieved from ww.starlingbank.co.uk: http://starlingbank.co.uk/

Stone, B. K. (1974). Systematic Interest-rate risk in a Two-index Model of Returns. *Journal of Financial and Quantitative Analysis*, 10, 709-721.

Sullivan, R., & Wang, Z. (2005). Internet Banking: AN Exploration in Technology Diffusion and Impact. *Working Paper, Payments System Research Department, Federal Reserve Bank of Kansas City*, https://www.kansascityfed.org/publicat/PSR/RWP/Sullivan-WangIB.pdf.

Taylor, S., & Taylor, P. (1995). Understanding information technology usage: A test of competing Models. *Institute for Operations Research and Management Sciences*, http://home.business.utah.edu/actme/7410/TaylorTodd.pdf.

The Economist. (2013, 05 27). *THe Economist*. Retrieved from www.economist.com: http://www.economist.com/blogs/economist-explains/2013/05/economist-explains-18

Valentin, C. (2012). Determinants of Corporate Financial Performance. *www.dafi.asce/revista/6/costea valentin.pdf*.

Vaz, J. J., Ariff, M., & Brooks, R. (2008). The effect of interest rate changes on bank stock returns. *Investment Management and Financial Innovations* , 5(4), 221-236.

World Bank. (2016, April 30). *Lending Rates*. Retrieved from The World Bank: http://data.worldbank.org/indicator/FR.INR.LEND

Zhu, J., Hassan, M., Li, W., & Jiaotong, X. (2007). Bank size and interest-rates sensitivity of Bank Stock returns. *International Journal of Business, Accounting and Finance*, 1(1).